UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/577,957	03/22/2007	Hakan Holmberg	47113-5069-00-US	5279

55694 7590 03/11/2010

DRINKER BIDDLE & REATH (DC)
1500 K STREET, N.W.
SUITE 1100
WASHINGTON, DC 20005-1209

EXAMINER	
ZIMMERMAN, JOHN J	
ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
03/11/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,957	HOLMBERG, HAKAN	
	Examiner	Art Unit	
	John J. Zimmerman	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *5/2/2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20060502*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FIRST OFFICE ACTION

Preliminary Amendment

1. The pending claims under consideration in this First Office Action are the claims submitted in the correspondence titled "PRELIMINARY AMENDMENT" received May 2, 2006. Claims 1-13 are pending in this application.

Priority

2. A copy of the foreign priority document is in the application file.

Information Disclosure Statement

3. The information disclosure statement received May 2, 2006 has been considered.

Specification

4. The disclosure is objected to because of the following informalities: The specification is objected to since it refers to specific claims and their subject matter (e.g. see page 1, line 9; page 5, line 20). Since the subject matter and numbering of the claims may change during the course of prosecution and issuing of a patent, the specification should not refer to specific claims and their subject matter. Appropriate correction is requested.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-11 and 13 are rejected under 35 U.S.C. 103(a) as obvious over Taruya (JP 2-122064).

7. Taruya discloses vapor depositing single or double coating layers of Al, Ti, Si, Nb, Cr, Mo, Cu, Ni and the nitrides and oxides thereof on stainless steel stock containing 8-25 wt.% Cr (e.g. see abstract and full document). Specific stainless steel stock containing approximately 19 wt.% chromium is shown in Table 1 and specific thicknesses are given in Table 2. While Taruya may not require that the layer tolerance is maximally +/- 30% of the layer thickness, it would be expected that the adhesion properties and tolerances for Taruya's layers would be similar to those of applicant's article because Taruya and applicants both use vapor deposition processes. Patent and Trademark Office can require applicants to prove that prior art products do not necessarily or inherently possess characteristics of claimed products where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes; burden of proof is on applicants where rejection based on inherency under 35 U.S.C. § 102 or on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, and Patent and Trademark Office's inability to manufacture products or to obtain and compare prior art

products evidences fairness of this rejection, *In re Best, Bolton, and Shaw*, 195 USPQ 431 (CCPA 1977). While Taruya may not require that the stainless steel stock have a thickness between 0.015 mm and 3.0 mm (e.g. claim 2), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use any thickness stainless steel substrate that would meet the structural requirements for the end use. Likewise, while Taruya may not require that the stainless steel having a specific minimum tensile strength of 1000 MPA (e.g. claim 3), the selection of stainless steel stock material to meet the various property requirements of different end uses is well within the level of ordinary skill in the art and it would have been obvious to one of ordinary skill in the art to use higher tensile strength stainless steels when they are required by the anticipated end use. Regarding claims to the thickness of the layers and the use of multiple layers, it would have been obvious to one of ordinary skill in the art to optimize the thickness of the layers of Taruya for their specified functions. A review of the applicant's specification shows no factual evidence of patentable distinction associated with the claimed thickness values. Regarding the intended uses of claims 10-11, barring evidence to the contrary, there is no reason to believe that the coated stainless steel sheets of Taruya could not meet these intended uses. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

8. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's disclosure of the prior art (see "Background of the Invention, pages 1-5) in view of Cheng (U.S. Patent 6,280,581) and further in view of Iwamizu (JP 2003-203534).

9. Applicant discloses (pages 1-5) :

> "In many electronic devices such as telephones, remote controls, computers, etc., springs and other formed metallic parts are used for different functions. Hence, for electromagnetic shielding (EMS) purposes, springs are used in so called "finger stocks" as gaskets in removable sections in shielded boxes. In most such products, several different requirements on the material are at hand. For springs, the requirements are in general related to the mechanical behavior such as force, relaxation resistance, and fatigue resistance. However, as forming is generally involved, the material must be able to be formed to requested shapes without any cracking. Further, the ongoing miniaturization within this field also puts increasing demands on tight geometrical tolerances of components and parts in electronic devices. In addition to the above, it is sometimes crucial to have well defined electrical characteristics of such parts and components. This may involve specific properties regarding electrical conductivity or contact resistivity at interfaces within devices. Generally, when such requirements are present, the solution is to choose a conductive material such as copper or copper alloys, or alternatively to coat a steel with a conductive layer."
>
> "Coating may be carried out by various methods that can be divided into mechanical and chemical methods. These may also be sub-divided into high and low temperature methods. Mechanical methods may be exemplified by cladding, thermal by spraying or painting. In this context, cladding is represented by roll bonding, i.e., to bind two (or more) different materials by a rolling process that is relatively simple and may be carried out with different combinations of substrates and coatings. However, cladding suffers from some technical disadvantages, which are related to thickness tolerances and poor adhesion of the coated layer. This often requires a post-bonding heat treatment in order to obtain a diffusion zone between layers. If one (or several) of the layers is/are stainless steel, then a good adhesion is even more difficult to obtain due to the passive film at the stainless surface. Further, roll bonding is a low speed process and is limited in the possible combinations of base materials and coatings."
>
> "Another method to coat a substrate is by hot dipping of the product into a molten metal. Hot dipping is generally carried out with coatings that have a low melting point, e.g., zinc, etc. For coatings with higher melting points, such as nickel and copper, the temperature of the molten metal is so high that

> it will often affect the substrate material in a negative way. Further, to have an accurate process control of such molten bath allowing close tolerances on layer thickness, is difficult."
>
> "Electroplating is an electrochemical process in which the coating is achieved by passing an electrical current through a solution containing dissolved metal ions and the metal object to be plated. The metal substrate serves as the cathode in an electrochemical cell, attracting metal ions from the solution. Ferrous and non-ferrous metal substrates are plated with a variety of metals, including aluminum, brass, bronze, cadmium, copper, chromium, iron, lead, nickel, tin, and zinc, as well as precious metals, such as gold, platinum, and silver."
>
> "There are also some vapor deposition methods that can be used for depositing metals. Most methods are batch-like processes, but there are also some continuous processes. One example of a roll-to-roll method making use of electron-beam deposition is disclosed in WO 98/08986, which describes a method of manufacturing ferritic stainless FeCrAl-steel strips, by bringing about an aluminum coating of a substrate material in a roll-to-roll process. However, the method described in this patent application is optimized for a product suitable for use in a high temperature corrosive environment, thus requiring a material with a good high-temperature strength and also a good high-temperature corrosion resistance, i.e., oxidation resistance. Moreover, this patent application suggests that a homogenization annealing at a temperature of 950-1150.degree. C. is made in connection to the coating, in order to have the aluminum evenly distributed in the ferrite. This means that the final product in this case is not a coated product with an aluminum layer on the surface. Hence, it is rather a FeCrAl strip product with a uniform distribution of the alloying elements, including also aluminum. Further, this means that there are no special requirements on an oxide free interface and on a good adhesion of the layer."

10. Thus it is clear from applicant's disclosure of the prior art that there is clear motivation in the prior art to coat steel or stainless steel strips with metals of a higher conductivity when making electronic devices, such as springs, gaskets, connectors, etc. . ., and there is also clear prior art recognition that the ongoing miniaturization within these fields puts increasing demands on tight geometrical tolerances of components and parts in electronic devices. While the applicant's disclosure of the prior art does not state specific numerical tolerances required by the coated layers in the prior art (e.g. "maximally +/- 30% of the layer thickness" in claim 1, line 5),

it would have been obvious to one of ordinary skill in the art at the time the invention was made that the layer thickness tolerances would be optimizations which are specific to particular components and electronic devices. As noted in applicant's disclosure of the prior art, the tolerances are often directly associated with miniaturization of the device. Therefore, the smaller the device, the smaller the tolerances may be. Keeping the coating thicknesses within the tolerance limits determined for a particular device would have been obvious to one of ordinary skill in the art at the time the invention was made and is not an patentable distinction in itself. A review of the applicant's disclosure shows no factual results supporting patentable distinction for any particular numerical tolerance value over any other tolerance value. Applicant's description of the prior art may differ from the claimed subject matter in that applicant discloses that prior art coating processes such as electroplating have deficiencies in meeting thickness tolerances. The examiner notes that this is a well understood deficiency in the art and that the use of physical vapor deposition coating methods is obvious when uniformity of the coating film is desired. Cheng is applied merely to confirm that this is a well known fact in the coating art (e.g. "a major problem with electroplating techniques is a lack of uniformity of the resultant film thickness, as compared to a much better uniformity of film thickness that can be achieved with the PVD or CVD processes", column 2, lines 15-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a vapor deposition process instead of an electroplating process where smaller thickness tolerances are required. Since applicant discloses that there is also clear prior art recognition that the ongoing miniaturization within these fields puts increasing demands on tight geometrical tolerances of components and parts in electronic devices, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to use vapor deposition processes to apply coatings where tighter tolerances are required. Regarding method claim 12, applicant further discloses an electron beam evaporation process in a roll-to-roll process is prior art (e.g. see page 6, lines 7-20). Since the use of vapor deposition to meet increasing demands for higher tolerances of components and parts in electronic devices is obvious as discussed above, the use of admitted conventional prior art vapor deposition processes to deposit the coating and clean the substrate would also have been obvious to one of ordinary skill in the art at the time the invention was made since the claimed vapor deposition process and its equipment is available and has already been proven to be a viable process of vapor deposition. In addition, while applicant may not disclose the thickness of the prior art coatings as "maximally 15 μm" (e.g. claim 1, line 5), since the function of the coated layer is to provide electrical conductivity to the stainless steel substrate, it would be understood by one of ordinary skill in the art at the time the invention was made that the layer must be at least thick enough to increase the conductivity of the strip to meet conductivity specifications, but no so thick that it unacceptably increases the costs of the coated strip or detrimentally affects the mechanical properties of the strip. Determination of the maximum thickness of the conductive layer to meet these conditions is well within the purview of the skilled artisan and is understood to be dependent on the specifications of the particular device being manufactured. A review of the applicant's disclosure shows no factual results supporting patentable distinction for any particular numerical thickness maximum over any other numerical thickness maximum. The use of single or multiple coating layers (e.g. see claims 8 and 13) would also have been obvious. This is evidenced by Iwamizu. Iwamizu confirms that it is obvious to use stainless steel plated with conductive metals (e.g. copper) in place of the copper

alloys typically used for prior art electrical contact materials (e.g. see paragraphs [0005]). Iwamizu also shows that these conductive coatings can also be combinations of nickel or tin over copper (e.g. see paragraph [0007]). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multiple conductive coatings such as nickel or tin over the copper layer on stainless steel substrates since Iwamizu shows these combinations of coatings to be typical for plated stainless steel electrical contacts. While the applicant's disclosure of the prior art may not disclose the thickness of the prior art substrates (e.g. claim 2), it would have been obvious to one of ordinary skill in the art to use a substrate that would be thick enough to meet the structural requirements of the electronic device, while not so thick as to be heavier and more costly than necessary. Optimization of the thickness of the substrate would be obvious for these reasons. In any event, Iwamizu shows that typical stainless steel electrical contact substrates in the art is 0.05-0.5 mm (e.g. see paragraph [0006]). While applicant's description of the prior art may not disclose the chromium content (e.g. claim 1, line 6) or the tensile strength (e.g. claim 3, line 4) of the prior art stainless steel substrates used in electronic devices, it would have been obvious to one of ordinary skill in the art to select stainless steels that meet the corrosion and tensile strength requirements of the particular electronic device. Selecting the appropriate stainless steel materials to meet the properties required for a particular electronic device would be well within the purview of one of ordinary skill in the electronics arts and spring arts. In any event, Iwamizu shows that typical stainless steels compositions used for electrical contacts contain 10-25 wt.% chromium and can be chosen from austenite stainless steels such as SUS301 and SUS304, or martensite SUS420J and precipitation hardenable stainless steels such as SUS632J1 (e.g. see paragraph [0009]). Iwamizu

also shows that the stainless steel should exhibit appropriate tensile strength, elastic coefficient, spring deflection limit and hardness for electrical contacts (e.g. see paragraph [0011]).

11. Regarding the use of applicant's disclosure of the prior art in rejections, it is axiomatic that consideration of the prior art cited by the examiner must, of necessity, include consideration of the admitted state of the art found in applicant's specification, *In re Davis*, 305 F.2d 501, 134 USPQ 256 (CCPA 1962); *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986). Admitted knowledge in the prior art may be used in determining patentability of the claimed subject matter, *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975). See MPEP 2129.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional prior art made of record serves to further establish the level of ordinary skill in the art. Sugimoto (U.S. 2004/0038585) is cited to establish that silver plated stainless steel is considered an alternative to beryllium copper alloys in electronic device spring plates. Sugimoto also shows that a typical metal plate thickness of 0.1-0.3 is conventional for such devices (e.g. see paragraph [0028]). Saen (U.S. 4,870,227) is cited to confirm that plating thickness tolerances are typically specified in the electronics art (e.g. column 2, lines 11-21). Srinivasan (U.S. 4,340,449) further discusses the need for tighter coating thickness tolerances in plated electrical contacts formed of spring materials (e.g. see column 1, lines 7-55). Furuya (U.S. 4,650,723) is cited to confirm that stainless steel coated with silver, copper or gold has been considered in the prior art to replace copper alloys for electrical contacts, such as

connectors, switches or relays, since it has the required springiness and high conductivity for these uses (e.g. see column 1, line 13 - column 2, line 21).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (571) 272-1547. The examiner can normally be reached on 8:30am-5:00pm, M-F. Supervisor Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John J. Zimmerman
Primary Examiner
Art Unit 1794

/John J. Zimmerman/
Primary Examiner, Art Unit 1794

jjz
March 8, 2010